PHILADELPHIA NEUROLOGICAL SOCIETY.

February 25, 1901.

The President, Dr. James Tyson, in the chair.

Dr. F. X. Dercum and Dr. W. H. Teller presented a case of astereognosis resulting from injury of the brain in the superior parietal region.

Drs. Walton and Paul, of Boston, by invitation read a paper on stereognosis.

Dr. F. X. Dercum said that the Society was to be congratulated on having presented to it this lucid exposition of the subject of astereognosis. The parallel drawn between this condition and sensory and motor aphasia, he considered a very happy one. He thought that the view of Dr. Walton that there was an area in the cortex where the various sensations which go to the recognition of an object are combined, was probably correct.

Dr. Charles W. Burr thought that it was wrong to speak of the stereognostic sense. Stereognosis is not a sense; it is a form of judgment. He thought that the term stereognostic faculty would be the better one.

With reference to the word astereognosis, he thought that it would be better to speak of stereoagnosis, as the alpha belongs to the latter half of the word. He referred to a case he had seen, that of a man aged 25 years, who at the age of five years had a fracture of the skull followed by hemiplegia, from which he entirely recovered. When he came under observation there was no sign of motor palsy, no disturbance of the reflexes, and no interference with sensation; yet he was unable to name any object placed in his hand. Dr. Burr thought this case proved that there may be loss of the faculty of recognition of an object by contact without any loss of sensation.

A second case was that of a woman who was also mind blind. She came to the hospital and stated that she could not see. On examination, the ophthalmologist found that she could see objects but could not recognize them. There was no disturbance of spontaneous speech. She could feel touch, heat, cold and pain; yet when an object was put in her hand she was unable to say what it was, and did not recognise it. She later developed symptoms of diffuse brain disease, and at the autopsy the lesions were so diffuse that the beginning of the trouble could not be determined.

Dr. Burr believed that just as there is a part of the occipital lobe in which are stored up memories of things seen, so there is a part of the brain in which are stored up memories of things felt, and this part he believed was in the posterior parietal lobe behind the motor cortex. There are some grounds for this belief. In almost every case in which the inability to recognise objects has been dependent upon brain disease, there has been either a history of injury to the skull in the parietal region, or there has been found distinct disease in the parietal lobe behind the mortor cortex.

Dr. James Hendrie Lloyd thought that in attempting an analysis of this subject we should begin by recognizing the fact that there are certain elementary properties of the nerve cell on the sensory side of the problem, which we generally speak of as the pain, tactile and thermal senses. These elementary properties are probably inherent to every sensory nerve cell. In the lower forms of life, we have every reason to believe that they are all present. When we come to the higher animal forms in which there is elaborated a complex psychical life, we have a much more complex matter to deal with. We have here the activity of the brain cortex and we must recognise certain psychological problems more complex than those of the sensations of pain, heat and cold. He considered that it required quite an elaborated psychological perception to determine the qualities of an object, such as its size, shape and location in space, and he could not conceive that among the lower forms of life there could be any such conception. When we come to the higher forms of life these conceptions are not only present but are essential.

This is, therefore, a physiological and psychological as well as a pathological question. Looking at it from the practical standpoint of pathology, we have pretty good grounds for knowing the course in the spinal cord for these elementary qualities of sensation, such as pain, tactile and thermal sense. We know that they run in different tracts through the cord. These facts have been proved in certain cases by pathological conditions which he had himself demonstrated in some of his own cases.

When, however, we come to lesions of the cortex or of the cerebral hemisphere, then we come into the region where there is necessarily present knowledge or judgment.

He referred to a rare form of aphasia which he had seen some years ago. The woman could not name an object which was presented to her sight, but if the object were placed in her hand she would name it instantly. In this case there was evidently a breaking up of the fibers that proceeded to her speech center by way of the visual sense, but the fibers that approached by way of the tactile or stereognostic sense remained intact.

In the case reported by Drs. Mills and Keen, Dr. Lloyd had made an independent diagnosis of a tumor in the superior parietal lobule. He based this diagnosis on the fact that there was here a peculiar form of incoördination due to a sort of astereognosis which was practically identical with what he had seen in a previous case in his wards at Blockley, shown by autopsy to be due to lesion in the superior parietal lobule. He did not mean to assert that the superior parietal lobule was the seat of all astereognostic symptoms, but he had seen a number of cases in which astereognosis associated with a form of incoördination had been associated with lesion of the superior parietal lobule. The case of Drs. Mills and Keen had been to him of extraordinary interest, because it was a practical pathological demonstration of some of these rather fine distinctions.

Dr. William G. Spiller remarked that the term stereognostic perception had been proposed in place of stereognostic sense. It has been supposed that no case of organic disease with loss of stereognosis and without disturbance of sensation is on record. The cases referred to in the paper by Drs. Walton and Paul, and in this discussion, however, would seem to be cases of this character. Dr. Spiller had studied a case in which stereognosis was completely lost without disturbance of cutaneous sensation, but careful examination revealed some impairment of the sense of position.

It would be exceedingly important, if it were possible, to determine the representation in the cortex of different forms of sensation. In the spinal cord the different forms of sensation are probably represented in different tracts. The evidence in regard to this subject is based partly on cases of Brown-Séquard paralysis. The so-called muscular sense is probably located in the posterior columns. There is doubt as to the location of the tactile fibers, whether they are in the posterior or in the lateral columns. In a case of syringomyelia reported by Dr. Dercum and himself, the cavity had extended throughout one posterior horn, but tactile sense was preserved. It is doubtful whether the lemniscus contains all of the sensory fibers. The lemniscus is composed chiefly of the posterior column fibers, and probably terminates in the optic thalamus. It is possible, but not demonstrated, that in the cortex the various forms of sensation are dissociated, and we have suspected for some time that the so-called muscular sense is probably represented in the parietal lobe. The location of tactile, pain and thermal senses in the cortex is not definitely known. Much more work is needed before we can accept any sharply limited cortical location for these senses.

There may be an analogy between the cortical location of sensation and that of speech. Just as there is a speech zone, comprising the back part of the first temporal convolution, the angular gyrus and the area of Broca, and injury of any part of this zone causes aphasia with a preponderance of symptoms according to the part injured; so there may be a zone of sensation. He was not prepared to accept the view that there is a stereognostic zone confined to the posterior part of the superior parietal lobe, and that injury of only this cortical area causes astereognosis. As he did not accept a concept center for speech, confined to a very small area of the cortex, but believed that the whole speech area was a concept center; so the whole sensory area might be regarded as a stereognostic area.

Dr. F. X. Dercum said that he had no doubt that all parts of the cortex play a rôle in the recognition of objects. If the object is a complex one, all the sensory faculties are called into play, and even the frontal lobes may take part, but he felt certain that there is an area which for practical purposes we can call the stereognostic area a lesion of which will give rise to astereognosis.

Dr. Spiller remarked that he had referred only to the sensory area, as stereognosis has to do with the recognition of objects by contact.